PATENT COOPERATION TREATY

5030
09/529873

PCT

From the INTERNATIONAL BUREAU

To:

DANIELS, Jeffrey, Nicholas
Page White & Farrer
54 Doughty Street
London WC1N 2LS
ROYAUME-UNI

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and Administrative Instructions, Section 422)

Date of mailing (day/month/year)
17 April 2000 (17.04.00)

Applicant's or agent's file reference
88369/JND/CH

IMPORTANT NOTIFICATION

International application No.
PCT/GB98/03154

International filing date (day/month/year)
21 October 1998 (21.10.98)

1. The following indications appeared on record concerning:

[X] the applicant [ ] the inventor [ ] the agent [ ] the common representative

Name and Address

CAMBRIDGE DISPLAY TECHNOLOGY LTD.
181a Huntingdon Road
Cambridge CB3 0DJ
United Kingdom

State of Nationality: GB
State of Residence: GB
Telephone No.:
Facsimile No.:
Teleprinter No.:

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

[ ] the person [ ] the name [X] the address [ ] the nationality [ ] the residence

Name and Address

CAMBRIDGE DISPLAY TECHNOLOGY LTD.
Greenwich House
Madingley Rise
Madingley Road
Cambridge CB3 OHJ
United Kingdom

State of Nationality: GB
State of Residence: GB
Telephone No.:
Facsimile No.:
Teleprinter No.:

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

[X] the receiving Office
[ ] the International Searching Authority
[ ] the International Preliminary Examining Authority
[ ] the designated Offices concerned
[X] the elected Offices concerned
[ ] other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer
G. Bähr

Telephone No.: (41-22) 338.83.38

From the INTERNATIONAL BUREAU

PCT

To:

United States Patent and Trademark Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

Date of mailing (day/month/year) 12 July 1999 (12.07.99)	
International application No. PCT/GB98/03154	**Applicant's or agent's file reference** 88369/JND/CH
International filing date (day/month/year) 21 October 1998 (21.10.98)	**Priority date** (day/month/year) 21 October 1997 (21.10.97)
Applicant HOLMES, Andrew, Bruce et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

20 May 1999 (20.05.99)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

S. Mafla

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
88369/JND/CH		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/GB 98/03154	21/10/1998	21/10/1997
Applicant		
CAMBRIDGE DISPLAY TECHNOLOGY LTD et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. [ ] **Certain claims were found unsearchable** (see Box I).

2. [ ] **Unity of invention is lacking** (see Box II).

3. [ ] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
   - [ ] filed with the international application.
   - [ ] furnished by the applicant separately from the international application,
     - [ ] but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
   - [ ] Transcribed by this Authority

4. With regard to the **title,**
   - [ ] the text is approved as submitted by the applicant
   - [X] the text has been established by this Authority to read as follows:

   POLYMERIC MATERIALS FOR ELECTROLUMINESCENT DEVICES

5. With regard to the **abstract,**
   - [X] the text is approved as submitted by the applicant
   - [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

   Figure No. --

   - [ ] as suggested by the applicant.
   - [ ] because the applicant failed to suggest a figure.
   - [ ] because this figure better characterizes the invention.
   - [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
[redacted]/GB 98/03154

A. CLASSIFICATION OF SUBJECT MA[redacted]
IPC 6 C09K11/06 H01B1/12 C08G61/10 H05B33/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C09K H01B C08G H05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 745 658 A (STICHTING SCHEIKUNDIG ONDERZOE ;STICHTING TECH WETENSCHAPP (NL); U) 4 December 1996 see page 3, line 35 - line 45 ---	1,2,6,8, 10,17-29
X	US 5 558 904 A (HSIEH BING R ET AL) 24 September 1996 cited in the application see example 6 ---	1,2, 8-11, 14-29
X	WEI P K ET AL: "SURFACE MADIFICATION AND PATTERNING OF CONJUGATED POLYMERS WITH NEAR-FIELD OPTICAL MICROSCOPY" ADVANCED MATERIALS, vol. 8, no. 7, July 1996, pages 573-576, XP000598874 Scheme 2 --- -/--	1,2,8, 14-29

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 December 1998	12/01/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Shade, M

1

Form PCT/ISA/210 (second sheet) (July 1992)

International Application No
[redacted]/GB 98/03154

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	ANTONIADIS H ET AL: "LIGHT-EMITTING DIODES BASED ON POLY(2,3-DIPHENYL-1,4-PHENYLENE VINYLENE)" POLYMERS FOR ADVANCED TECHNOLOGIES, vol. 8, no. 7, July 1997, pages 392-398, XP000695518 cited in the application see the whole document	1,2, 8-11, 14-29
X	WAN W C ET AL: "HALOGEN PRECURSOR ROUTE TO POLY 2,3-DIPHENYL-P-PHENYLENE)VINYLENE (DP-PPV): SYNTHESIS, PHOTOLUMINESCENCE, ELECTROLUMINESCENCE, AND PHOTOCONDUCTIVITY" MACROMOLECULES, vol. 30, no. 21, 20 October 1997, pages 6567-6574, XP000720388 see the whole document	1,2,8, 11,14-29
A	GETTINGER ET AL: "A photoluminescence study of poly(phenylene vinylene) derivatives: The effect of intrinsic persistence length" JOURNAL OF CHEMICAL PHYSICS, vol. 101, no. 2, 15 July 1994, pages 1673-1678, XP002088538 see the whole document	1-29
A	WOO: "Optical spectra and excitations in phenylene vinylene oligomers" SYNTHETIC METALS, vol. 59, 1993, pages 13-28, XP002088539 see the whole document	1-29
A	US 5 514 878 A (HOLMES ANDREW B ET AL) 7 May 1996 see the whole document	1-29

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
[redacted]/GB 98/03154

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0745658	A	04-12-1996	NONE		
US 5558904	A	24-09-1996	NONE		
US 5514878	A	07-05-1996	AU	6729194 A	03-01-1995
			EP	0704094 A	03-04-1996
			WO	9429883 A	22-12-1994

PATENT COOPERATION TREATY

PCT

REC'D 15 FEB 2000
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
88369/JND/CH		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB98/03154	21/10/1998	21/10/1997
International Patent Classification (IPC) or national classification and IPC		
C09K11/06		
Applicant		
CAMBRIDGE DISPLAY TECHNOLOGY LTD et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
20/05/1999	11. 02. 00
Name and mailing address of the international preliminary examining authority:	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Komenda, C Telephone No. +49 89 2399 8308

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB98/03154

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-18 as originally filed

Claims, No.:

1-29 as originally filed

Drawings, sheets:

1/6-6/6 as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	13, 23
	No:	Claims	1-12, 14-22, 24-29
Inventive step (IS)	Yes:	Claims	
	No:	Claims	IS no: 1-29
Industrial applicability (IA)	Yes:	Claims	1-29
	No:	Claims	

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Concerning paragraph V:

1. Analysis of the cited documents:

D1: EP-A-0 745 658:
This document discloses on p. 3, formula 5 a compound, which falls within the scope of the claims of the present application. Experimental Example 5 shows the preparation of a light emitting electrode by spin coating of a toluene-solution of the compounds onto an ITO-coated glass plate. Thus, the subject-matter of claims 1-3, 5, 6, 8, 10, 17-22, 24-29 is anticipated by D1.

D2: US-A-5 558 904:
D2 discloses in Example 6 a process for the preparation of poly(2,3-diphenyl-p-phenylene-vinylene), which is identical to the process of the application. It is used for electrical devices / diodes. The polymer is applied by spin-coating techniques. Thus, the subject-matter of claims 1, 2, 8-12, 14-22, 24-29 is anticipated by D2.

D3: WEI P K ET AL: 'SURFACE MODIFICATION AND PATTERNING OF CONJUGATED POLYMERS WITH NEAR-FIELD OPTICAL MICROSCOPY' ADVANCED MATERIALS, vol. 8, no. 7, July 1996, pages 573-576, XP000598874:
This document concerns photo-oxidation study on conjugated polymers, exemplified by poly(3,4-diphenyl-2,5-thienylene vinylene). The preparation process is identical with the process of the application. The polymers are used for electrical devices / light emitting diodes. Thus, the subject-matter of claims 1, 2, 8, 14-21, 24-29 is anticipated by D3.

D4: ANTONIADIS H ET AL: 'LIGHT-EMITTING DIODES BASED ON POLY(2,3-DIPHENYL-1,4-PHENYLENE VINYLENE)' POLYMERS FOR ADVANCED TECHNOLOGIES, vol. 8, no. 7, July 1997, pages 392-398, XP000695518:
Light emitting diodes based on poly(2,3-diphenyl-1,4-phenylene vinylene) are disclosed. The polymers are prepared according to the process as claimed in the present application and are spin-coated on an ITO- coated substrate. Therefore, the subject-matter of claims 1, 2, 8-12, 14-22, 24-29 is anticipated by D4.

D5: WAN W C ET AL: 'HALOGEN PRECURSOR ROUTE TO POLY 2,3-DIPHENYL-P-PHENYLENE)VINYLENE (DP-PPV): SYNTHESIS, PHOTOLUMINESCENCE, ELECTROLUMINESCENCE, AND PHOTOCONDUCTIVITY' MACROMOLECULES, vol. 30, no. 21, 20 October 1997, pages 6567-6574, XP000720388:

This document discloses a poly(2,3-diphenyl-1,4-phenylene vinylene), which is prepared as claimed in the present application and used as electrical device /light emitting diode. Therefore, the subject-matter of claims 1, 2, 8-12, 14-21, 25-29 is anticipated by D5.

D6: GETTINGER ET AL: 'A photoluminescence study of poly(phenylene vinylene) derivatives: The effect of intrinsic persistence length' JOURNAL OF CHEMICAL PHYSICS, vol. 101, no. 2, 15 July 1994, pages 1673-1678, XP002088538:

Photoluminescence studies of poly(phenylene vinylene). The compounds abbreviated as MEH-PPV and BEH-PPV, although not substituted in the 2,3-positions but in the 2,5-positions, anticipate the subject-matter of claims 1, 2, 4-8, 10, 17-19, 26-29.

D7: WOO: 'Optical spectra and excitations in phenylene vinylene oligomers' SYNTHETIC METALS, vol. 59, 1993, pages 13-28, XP002088539 (A):

Optical studies on **unsubstituted** poly(phenylene vinylene).

D8: US-A-5 514 878 (A):

Conjugated polymers for electroluminescent devices, wherein the **vinylene moieties are substituted** with electronegative substituents. The preparation method is analogous to the method claimed in the present application.

Since the subject-matter of claims 1-12, 14-22 and 24-29 is anticipated by at least one of documents D1 to D6 it does not fulfil the requirements of Art. 33 PCT concerning novelty and inventive step.

2. The subject-matter of claims 13 and 23 is regarded as being novel, but as not involving an inventive step: For a skilled person it was a mere routine job to use

the substituents known from D1 (crown-ethers) and D5 (ethylhexyloxy) on a phenylene vinylene component, that is linked in 1,4-position. The use of a different solvent for spin-coating (chloroform instead of tetrahydrofuran or toluene) is merely a conventional variation.
Therefore, the subject-matter of claims 13 and 23 does not involve an inventive step.

3. The subject-matter of claims 1 to 29 is industrially applicable for the preparation of electroluminescent devices.

Concerning paragraph VIII:

The definition of the substituents in claim 1 is unclear concerning a) their position and b) their chemical structure. Their position and structure are merely defined as a result to be achieved, but not in terms of a technical feature.

```
=> s (poly 1,4-arylene vinylene or poly 1,4-phenylene vinylene or poly 1,4-phenyl
vinylene)
         139623 POLY
        2933363 1
        2882478 4
          12998 ARYLENE
           3969 VINYLENE
              0 POLY 1,4-ARYLENE VINYLENE
                (POLY(W)1(W)4(W)ARYLENE(W)VINYLENE)
         139623 POLY
        2933363 1
        2882478 4
          40189 PHENYLENE
           3969 VINYLENE
              8 POLY 1,4-PHENYLENE VINYLENE
                (POLY(W)1(W)4(W)PHENYLENE(W)VINYLENE)
         139623 POLY
        2933363 1
        2882478 4
         182722 PHENYL
           3969 VINYLENE
              0 POLY 1,4-PHENYL VINYLENE
                (POLY(W)1(W)4(W)PHENYL(W)VINYLENE)
L1            8 (POLY 1,4-ARYLENE VINYLENE OR POLY 1,4-PHENYLENE VINYLENE OR
              POLY 1,4-PHENYL VINYLENE)

=> s l1 and photoluminescen? and electroluminescen?
           2074 PHOTOLUMINESCEN?
           7747 ELECTROLUMINESCEN?
L2            3 L1 AND PHOTOLUMINESCEN? AND ELECTROLUMINESCEN?

=> s l2 and blue
         138337 BLUE
L3            2 L2 AND BLUE

=> d l3 1-2

L3   ANSWER 1 OF 2  USPATFULL
AN     1999:53539  USPATFULL
TI     Polyfluorenes as materials for photoluminescence and
       electroluminescence
IN     Pei, Qibing, United States
       Yu, Gang, United States
       Yang, Yang, all of Santa Barbara, CA, United States
PA     Uniax Corporation, Santa Barbara, CA, United States (U.S. corporation)
PI     US 5900327             19990504
AI     US 1997-968852         19971105 (8)
RLI    Continuation of Ser. No. US 1996-610664, filed on 4 Mar 1996, now
       abandoned
DT     Utility
FS     Granted
LN.CNT 882
INCL   INCLM: 428/690.000
       INCLS: 428/691.000; 428/917.000; 313/504.000; 528/422.000; 528/425.000
NCL    NCLM:  428/690.000
       NCLS:  313/504.000; 428/691.000; 428/917.000; 528/422.000; 528/425.000
IC     [6]
       ICM: N05B033-00
EXF    428/690; 428/691; 428/917; 313/504; 528/422; 528/425
```

L3 ANSWER 2 OF 2 USPATFULL
AN 1998:31298 USPATFULL
TI **Blue** light-emitting polymer and light-emitting diode adopting the same
IN Hwang, Do-hoon, Department of Chemistry, Korea Advanced Institute of Science and Technology, 371-1 Kusung-dong, Yusung-gu, Daejeon-city, Chungcheongnam-do, Korea, Republic of
Shim, Hong-ku, 132-1302 Hanbit Apt., Eoeun-dong, Yusung-gu, Daejeon-city, Chungcheongnam-do, Korea, Republic of
Sakong, Dong-sik, 115-802 Shibeommaeul Hanshin Apt., Seohyun-dong, Bundang-ku, Sungnam-city, Kyungki-do, Korea, Republic of
PI US 5731599 19980324
AI US 1995-562025 19951122 (8)
PRAI KR 1995-23528 19950731
DT Utility
FS Granted
LN.CNT 402
INCL INCLM: 257/040.000
INCLS: 257/103.000
NCL NCLM: 257/040.000
NCLS: 257/103.000
IC [6]
ICM: H01L035-24
ICS: H01L051-00
EXF 257/103; 257/40
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d l1 1-8

L1 ANSWER 1 OF 8 USPATFULL
AN 2000:98138 USPATFULL
TI Polymeric thin-film reversible electrochemical charge storage devices
IN Grunwald, Yaron, San Jose, CA, United States
PA Adven Polymers, Inc., San Jose, CA, United States (U.S. corporation)
PI US 6096453 20000801
AI US 1998-100203 19980619 (9)
DT Utility
FS Granted
LN.CNT 1754
INCL INCLM: 429/212.000
INCLS: 429/213.000
NCL NCLM: 429/212.000
NCLS: 429/213.000
IC [7]
ICM: H01M004-60
EXF 429/212; 429/213; 429/303
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L1 ANSWER 2 OF 8 USPATFULL
AN 1999:110767 USPATFULL
TI Encapsulated organic light emitting device
IN Haskal, Eliav, Zurich, Switzerland
Karg, Siegfried, Solnhofen, Germany, Federal Republic of
Salem, Jesse Richard, Cupertino, CA, United States
Scott, John Campbell, Los Gatos, CA, United States
PA International Business Machines Corporation, Armonk, NY, United States (U.S. corporation)
PI US 5952778 19990914

AI US 1997-820219 19970318 (8)
DT Utility
FS Granted
LN.CNT 268
INCL INCLM: 313/504.000
INCLS: 313/506.000; 313/507.000; 313/512.000
NCL NCLM: 313/504.000
NCLS: 313/506.000; 313/507.000; 313/512.000
IC [6]
ICM: H01J001-62
ICS: H01J063-04
EXF 313/503-504; 313/505; 313/506-507; 313/509-510; 313/512
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L1 ANSWER 3 OF 8 USPATFULL
AN 1999:53539 USPATFULL
TI Polyfluorenes as materials for photoluminescence and electroluminescence
IN Pei, Qibing, United States
Yu, Gang, United States
Yang, Yang, all of Santa Barbara, CA, United States
PA Uniax Corporation, Santa Barbara, CA, United States (U.S. corporation)
PI US 5900327 19990504
AI US 1997-968852 19971105 (8)
RLI Continuation of Ser. No. US 1996-610664, filed on 4 Mar 1996, now abandoned
DT Utility
FS Granted
LN.CNT 882
INCL INCLM: 428/690.000
INCLS: 428/691.000; 428/917.000; 313/504.000; 528/422.000; 528/425.000
NCL NCLM: 428/690.000
NCLS: 313/504.000; 428/691.000; 428/917.000; 528/422.000; 528/425.000
IC [6]
ICM: N05B033-00
EXF 428/690; 428/691; 428/917; 313/504; 528/422; 528/425

L1 ANSWER 4 OF 8 USPATFULL
AN 1998:69523 USPATFULL
TI Light emitting device
IN Gordon, II, Joseph Grover, San Jose, CA, United States
Karg, Sigfried Friedrich, Solnhofen, Germany, Federal Republic of
Kaufman, James Harvey, San Jose, CA, United States
Kreyenschmidt, Martin, Worms-Pfeddersheim, Germany, Federal Republic of
Miller, Robert Dennis, San Jose, CA, United States
Scott, John Campbell, Los Gatos, CA, United States
PA International Business Machines Corporation, Armonk, NY, United States (U.S. corporation)
PI US 5767624 19980616
AI US 1996-670480 19960626 (8)
DT Utility
FS Granted
LN.CNT 244
INCL INCLM: 313/509.000
INCLS: 313/506.000
NCL NCLM: 313/509.000
NCLS: 313/506.000
IC [6]
ICM: H01J001-62
EXF 313/358; 313/509; 313/505; 313/506; 313/507; 313/508
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L1 ANSWER 5 OF 8 USPATFULL
AN 1998:31298 USPATFULL
TI Blue light-emitting polymer and light-emitting diode adopting the same
IN Hwang, Do-hoon, Department of Chemistry, Korea Advanced Institute of Science and Technology, 371-1 Kusung-dong, Yusung-gu, Daejeon-city, Chungcheongnam-do, Korea, Republic of
Shim, Hong-ku, 132-1302 Hanbit Apt., Eoeun-dong, Yusung-gu, Daejeon-city, Chungcheongnam-do, Korea, Republic of
Sakong, Dong-sik, 115-802 Shibeommaeul Hanshin Apt., Seohyun-dong, Bundang-ku, Sungnam-city, Kyungki-do, Korea, Republic of
PI US 5731599 19980324
AI US 1995-562025 19951122 (8)
PRAI KR 1995-23528 19950731
DT Utility
FS Granted
LN.CNT 402
INCL INCLM: 257/040.000
INCLS: 257/103.000
NCL NCLM: 257/040.000
NCLS: 257/103.000
IC [6]
ICM: H01L035-24
ICS: H01L051-00
EXF 257/103; 257/40
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L1 ANSWER 6 OF 8 USPATFULL
AN 97:96685 USPATFULL
TI Fuel cell incorporating novel ion-conducting membrane
IN Ehrenberg, Scott G., Fishkill, NY, United States
Serpico, Joseph M., Troy, NY, United States
Wnek, Gary E., Latham, NY, United States
Rider, Jeffrey N., Troy, NY, United States
PA Dais Corporation, Palm Harbor, FL, United States (U.S. corporation)
PI US 5679482 19971021
AI US 1995-542474 19951006 (8)
RLI Continuation-in-part of Ser. No. US 1994-247285, filed on 23 May 1994, now patented, Pat. No. US 5468574
DT Utility
FS Granted
LN.CNT 1182
INCL INCLM: 429/249.000
INCLS: 427/115.000; 427/385.500; 204/296.000
NCL NCLM: 429/249.000
NCLS: 204/296.000; 427/115.000; 427/385.500
IC [6]
ICM: H01M002-16
ICS: B05D005-12; B05D003-02; C25B013-08
EXF 427/115; 427/385.5; 204/296; 204/242; 429/249
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L1 ANSWER 7 OF 8 USPATFULL
AN 93:68280 USPATFULL
TI Conductive polymer dye laser and diode and method of use
IN Moses, Daniel, Santa Barbara, CA, United States
PA The Regents of the University of California, Oakland, CA, United States (U.S. corporation)
PI US 5237582 19930817
AI US 1992-904731 19920626 (7)

DT Utility
FS Granted
LN.CNT 895
INCL INCLM: 372/053.000
INCLS: 372/054.000; 252/301.170
NCL NCLM: 372/053.000
NCLS: 252/301.170; 372/054.000
IC [5]
ICM: H01S003-20
EXF 372/53; 372/54; 252/301.17
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L1 ANSWER 8 OF 8 USPATFULL
AN 93:10288 USPATFULL
TI Conductive polymers formed from conjugated backbone polymers doped with non-oxidizing protonic acids
IN Han, Chien-Chung, Madison, NJ, United States
Elsenbaumer, Ronald L., Morris Township, Morris County, NJ, United States
PA Allied-Signal Inc, Morristown, NJ, United States (U.S. corporation)
PI US 5185100 19930209
AI US 1990-501066 19900329 (7)
DT Utility
FS Granted
LN.CNT 1050
INCL INCLM: 252/500.000
INCLS: 252/518.000; 528/422.000
NCL NCLM: 252/500.000
NCLS: 528/422.000
IC [5]
ICM: H01B001-20
EXF 252/500; 252/518; 528/422; 524/80; 524/401
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d l2 1-3

L2 ANSWER 1 OF 3 USPATFULL
AN 1999:53539 USPATFULL
TI Polyfluorenes as materials for **photoluminescence** and **electroluminescence**
IN Pei, Qibing, United States
Yu, Gang, United States
Yang, Yang, all of Santa Barbara, CA, United States
PA Uniax Corporation, Santa Barbara, CA, United States (U.S. corporation)
PI US 5900327 19990504
AI US 1997-968852 19971105 (8)
RLI Continuation of Ser. No. US 1996-610664, filed on 4 Mar 1996, now abandoned
DT Utility
FS Granted
LN.CNT 882
INCL INCLM: 428/690.000
INCLS: 428/691.000; 428/917.000; 313/504.000; 528/422.000; 528/425.000
NCL NCLM: 428/690.000
NCLS: 313/504.000; 428/691.000; 428/917.000; 528/422.000; 528/425.000
IC [6]
ICM: N05B033-00
EXF 428/690; 428/691; 428/917; 313/504; 528/422; 528/425

L2 ANSWER 2 OF 3 USPATFULL
AN 1998:31298 USPATFULL
TI Blue light-emitting polymer and light-emitting diode adopting the same
IN Hwang, Do-hoon, Department of Chemistry, Korea Advanced Institute of Science and Technology, 371-1 Kusung-dong, Yusung-gu, Daejeon-city, Chungcheongnam-do, Korea, Republic of
Shim, Hong-ku, 132-1302 Hanbit Apt., Eoeun-dong, Yusung-gu, Daejeon-city, Chungcheongnam-do, Korea, Republic of
Sakong, Dong-sik, 115-802 Shibeommaeul Hanshin Apt., Seohyun-dong, Bundang-ku, Sungnam-city, Kyungki-do, Korea, Republic of
PI US 5731599 19980324
AI US 1995-562025 19951122 (8)
PRAI KR 1995-23528 19950731
DT Utility
FS Granted
LN.CNT 402
INCL INCLM: 257/040.000
INCLS: 257/103.000
NCL NCLM: 257/040.000
NCLS: 257/103.000
IC [6]
ICM: H01L035-24
ICS: H01L051-00
EXF 257/103; 257/40
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L2 ANSWER 3 OF 3 USPATFULL
AN 93:68280 USPATFULL
TI Conductive polymer dye laser and diode and method of use
IN Moses, Daniel, Santa Barbara, CA, United States
PA The Regents of the University of California, Oakland, CA, United States (U.S. corporation)
PI US 5237582 19930817
AI US 1992-904731 19920626 (7)
DT Utility
FS Granted
LN.CNT 895
INCL INCLM: 372/053.000
INCLS: 372/054.000; 252/301.170
NCL NCLM: 372/053.000
NCLS: 252/301.170; 372/054.000
IC [5]
ICM: H01S003-20
EXF 372/53; 372/54; 252/301.17
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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